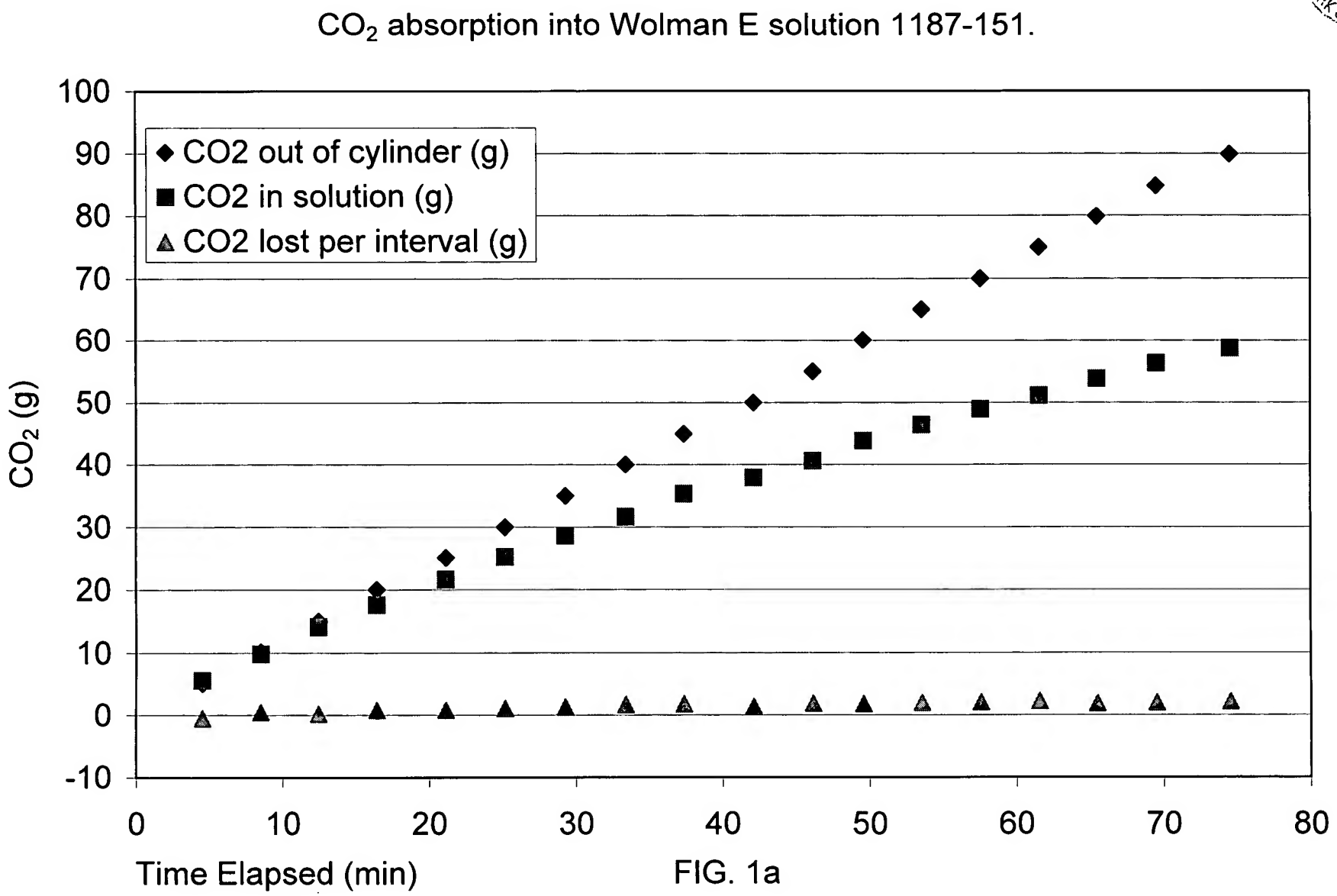

FIG. 1a

Decreasing pH with addition of CO_2 to Wolman E solution 1187-151.

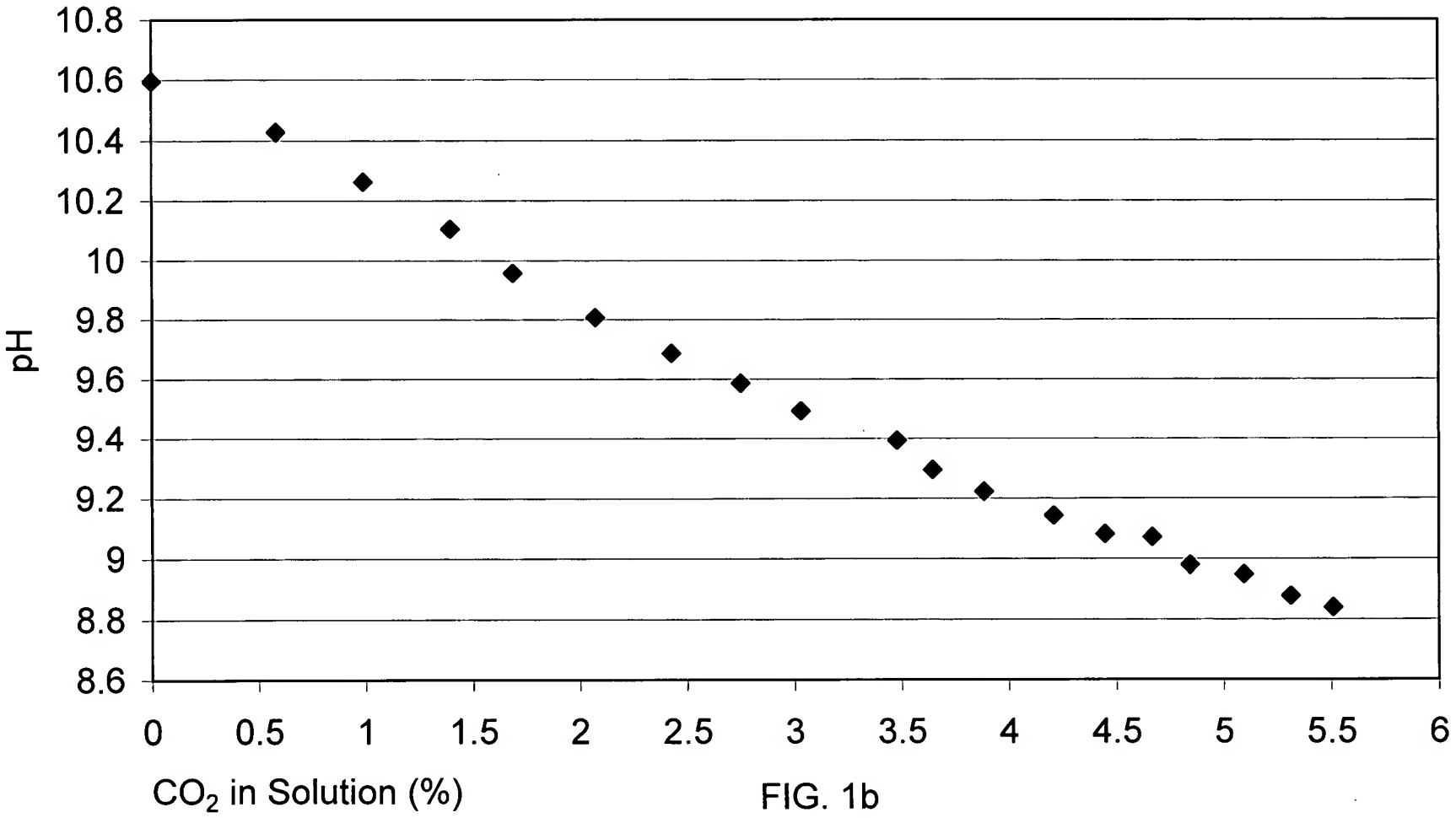

FIG. 1b

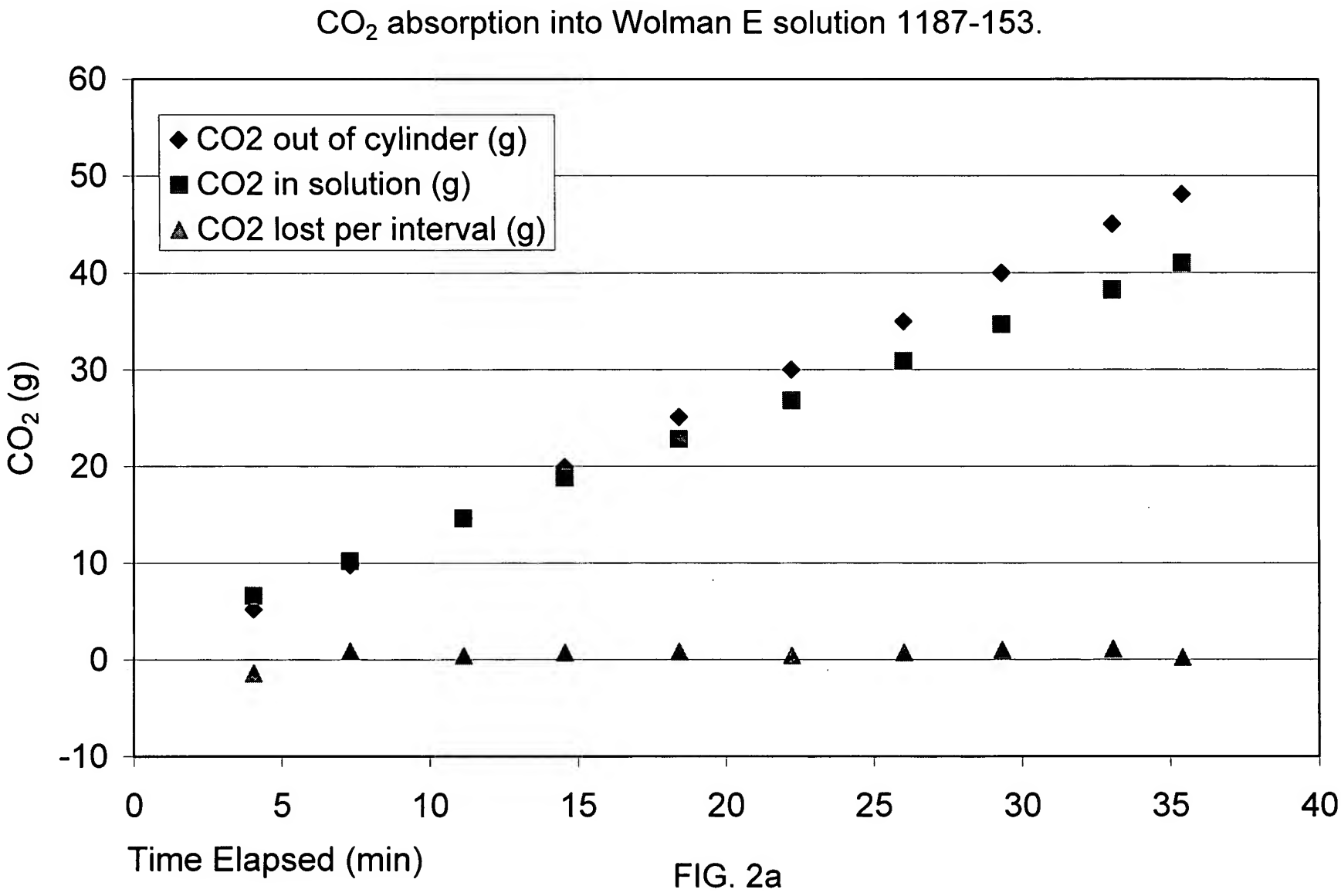
CO_2 absorption into Wolman E solution 1187-153.
CO2 out of cylinder (g)
CO2 in solution (g)
CO2 lost per interval (g)
CO_2 (g)
60
50
40
30
20
10
0
-10
0
5
10
15
20
25
30
35
40
Time Elapsed (min)

FIG. 2a

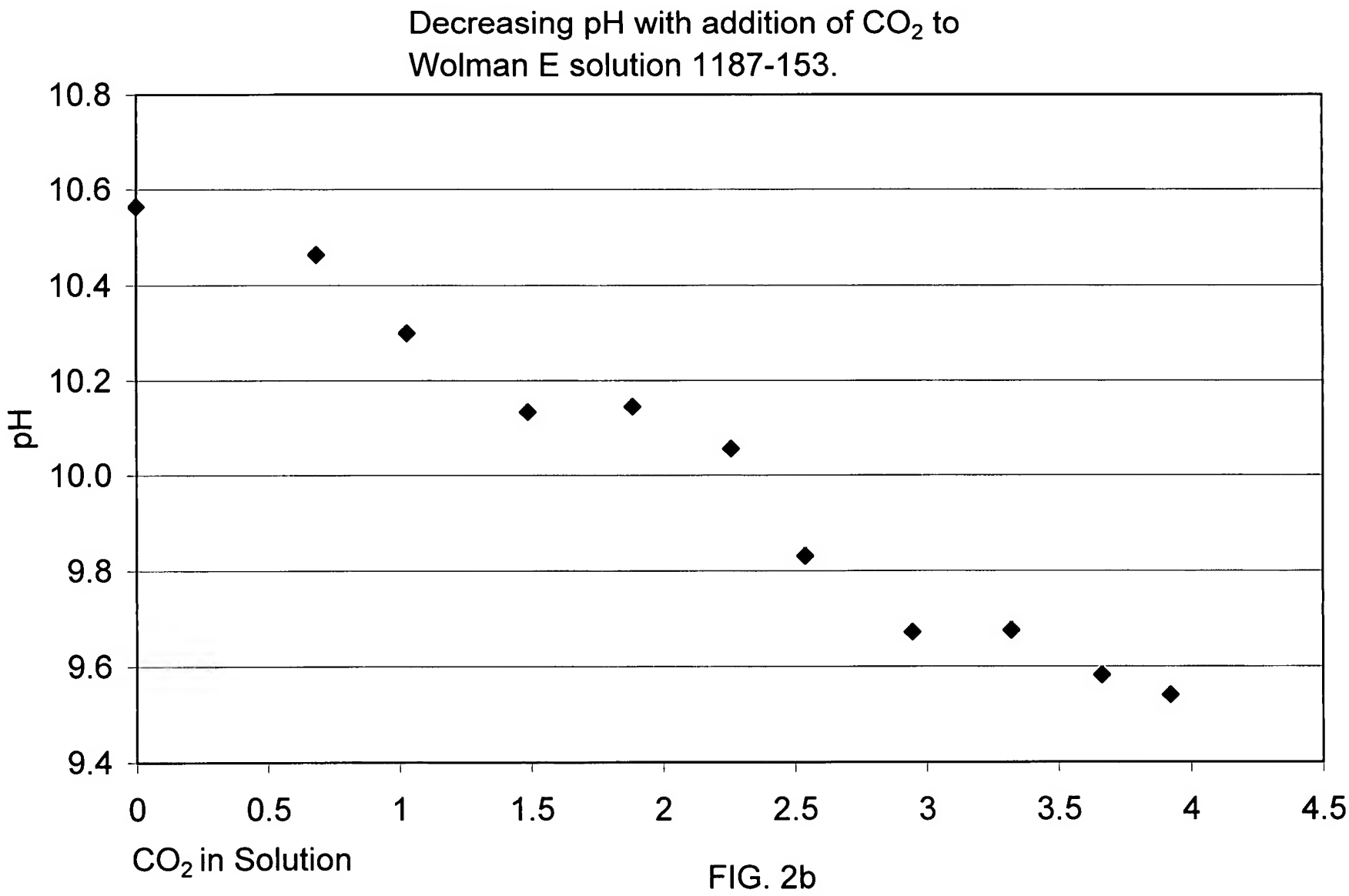
Decreasing pH with addition of CO_2 to Wolman E solution 1187-153.
10.8
10.6
10.4
10.2
10.0
9.8
9.6
9.4
pH
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
CO_2 in Solution

FIG. 2b

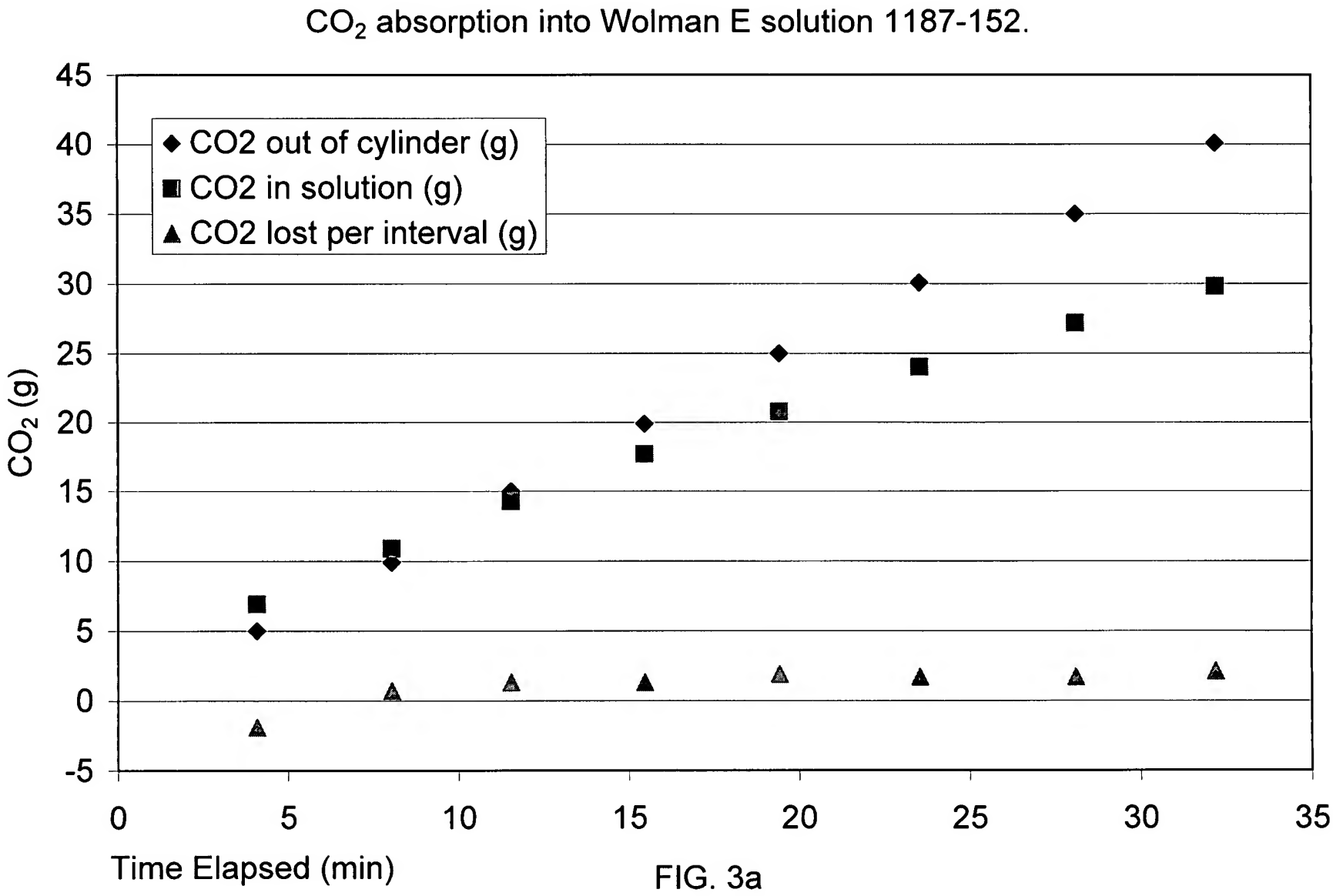
CO_2 absorption into Wolman E solution 1187-152.
CO2 out of cylinder (g)
CO2 in solution (g)
CO2 lost per interval (g)
CO_2 (g)
45
40
35
30
25
20
15
10
5
0
-5
0
5
10
15
20
25
30
35
Time Elapsed (min)

FIG. 3a

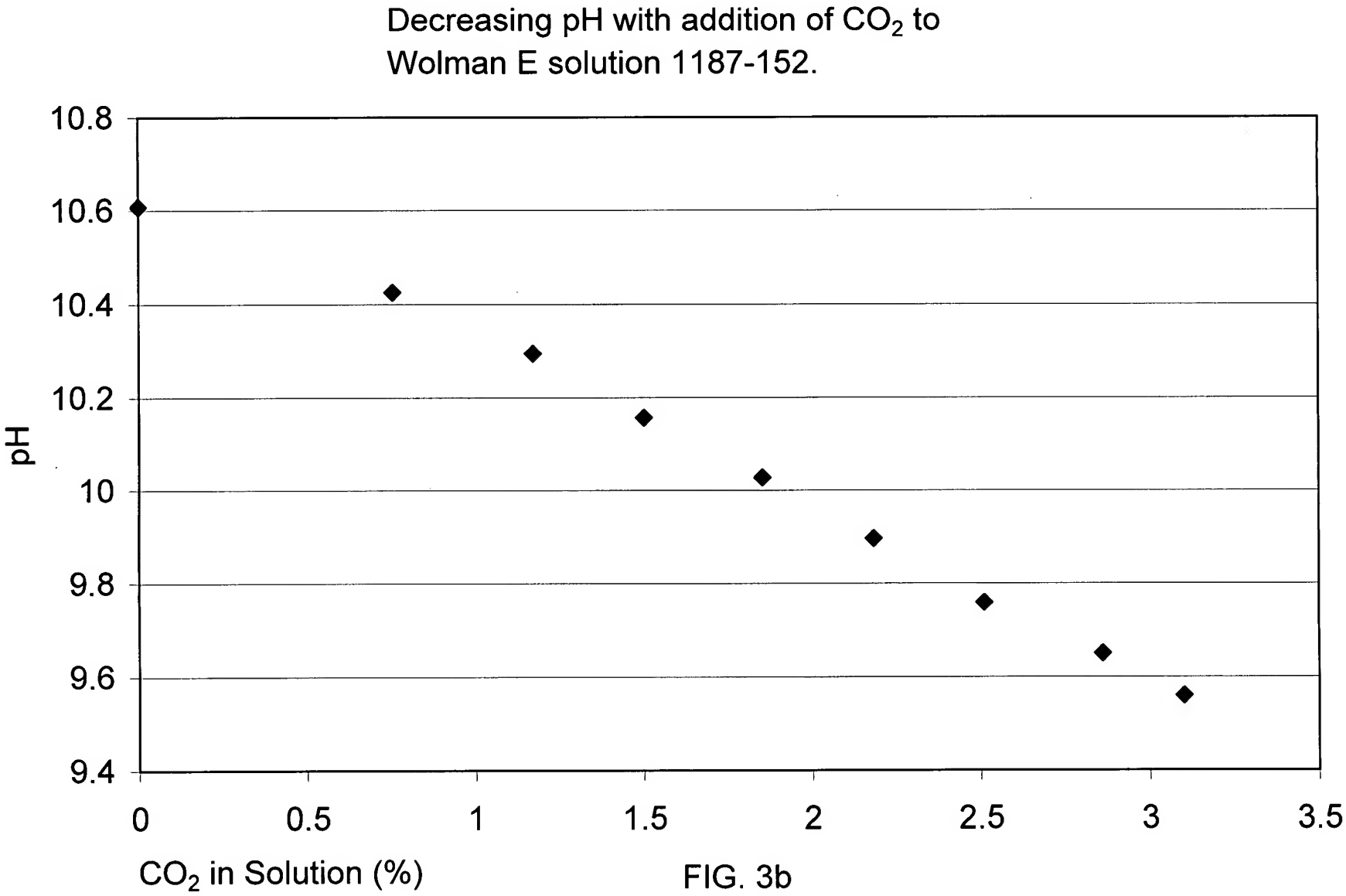
Decreasing pH with addition of CO_2 to Wolman E solution 1187-152.
10.8
10.6
10.4
10.2
10
9.8
9.6
9.4
pH
0
0.5
1
1.5
2
2.5
3
3.5
CO_2 in Solution (%)

FIG. 3b

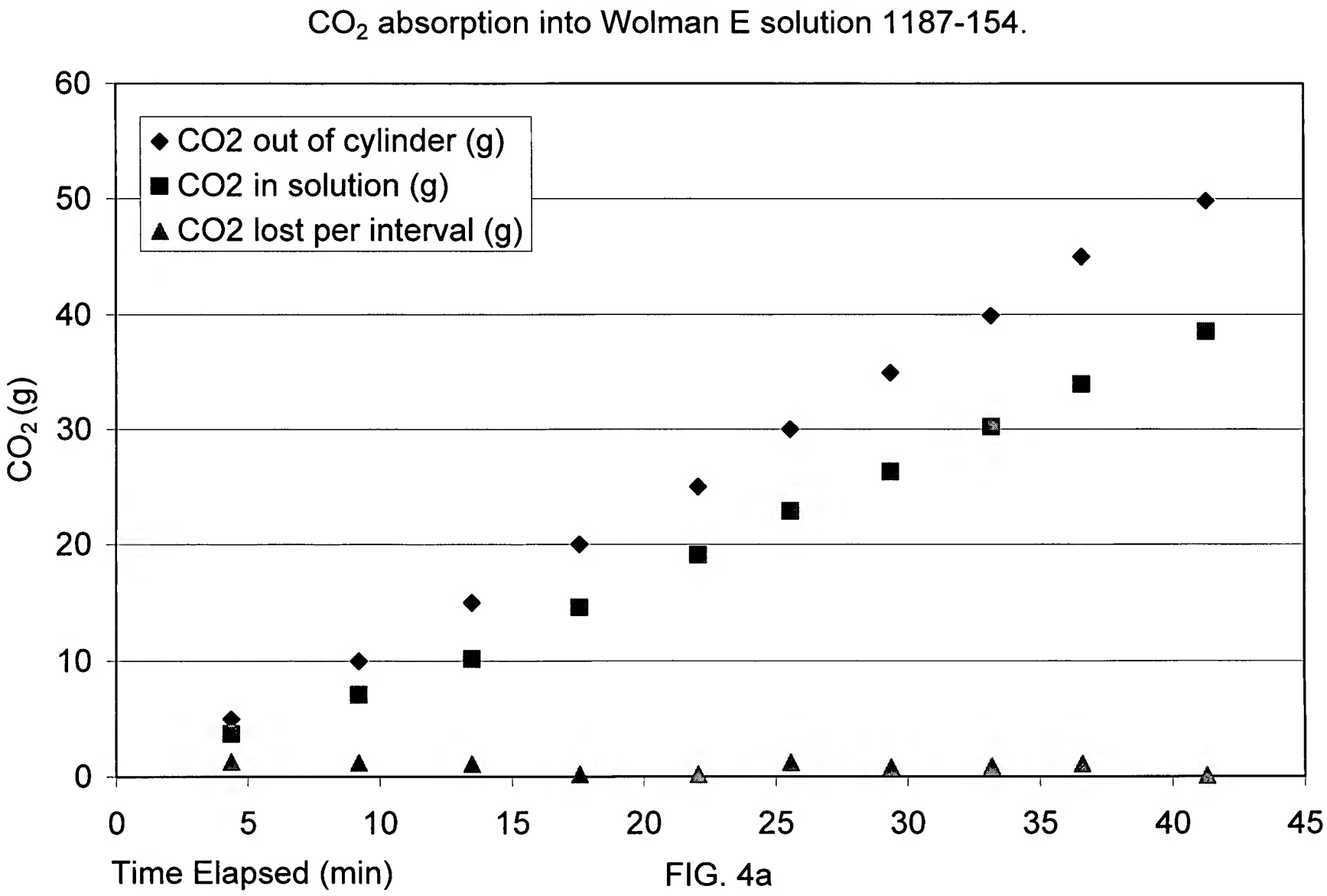
CO_2 absorption into Wolman E solution 1187-154.
CO2 out of cylinder (g)
CO2 in solution (g)
CO2 lost per interval (g)
CO_2 (g)
60
50
40
30
20
10
0
0
5
10
15
20
25
30
35
40
45
Time Elapsed (min)

FIG. 4a

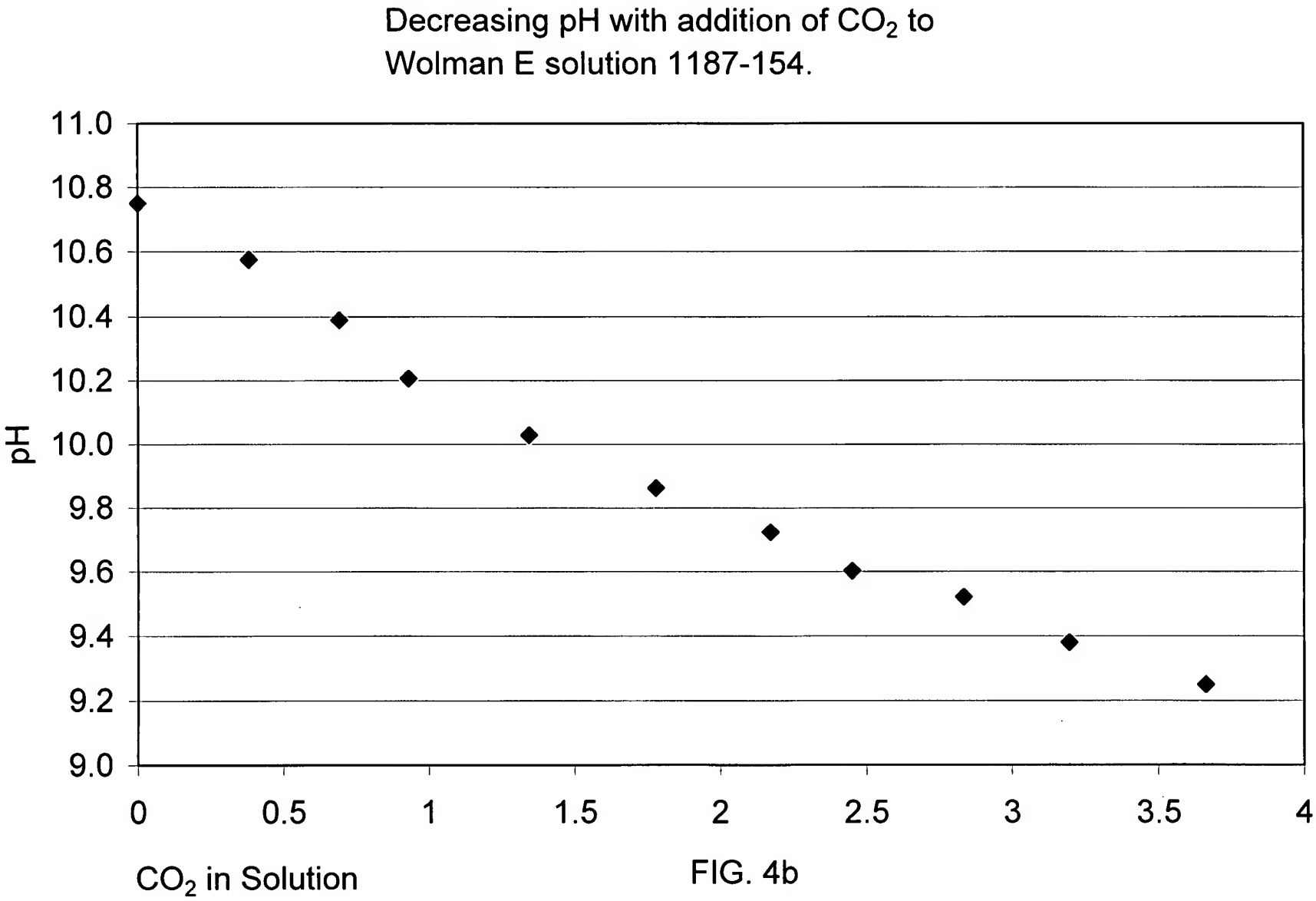
Decreasing pH with addition of CO_2 to Wolman E solution 1187-154.
pH
11.0
10.8
10.6
10.4
10.2
10.0
9.8
9.6
9.4
9.2
9.0
0
0.5
1
1.5
2
2.5
3
3.5
4
CO_2 in Solution

FIG. 4b

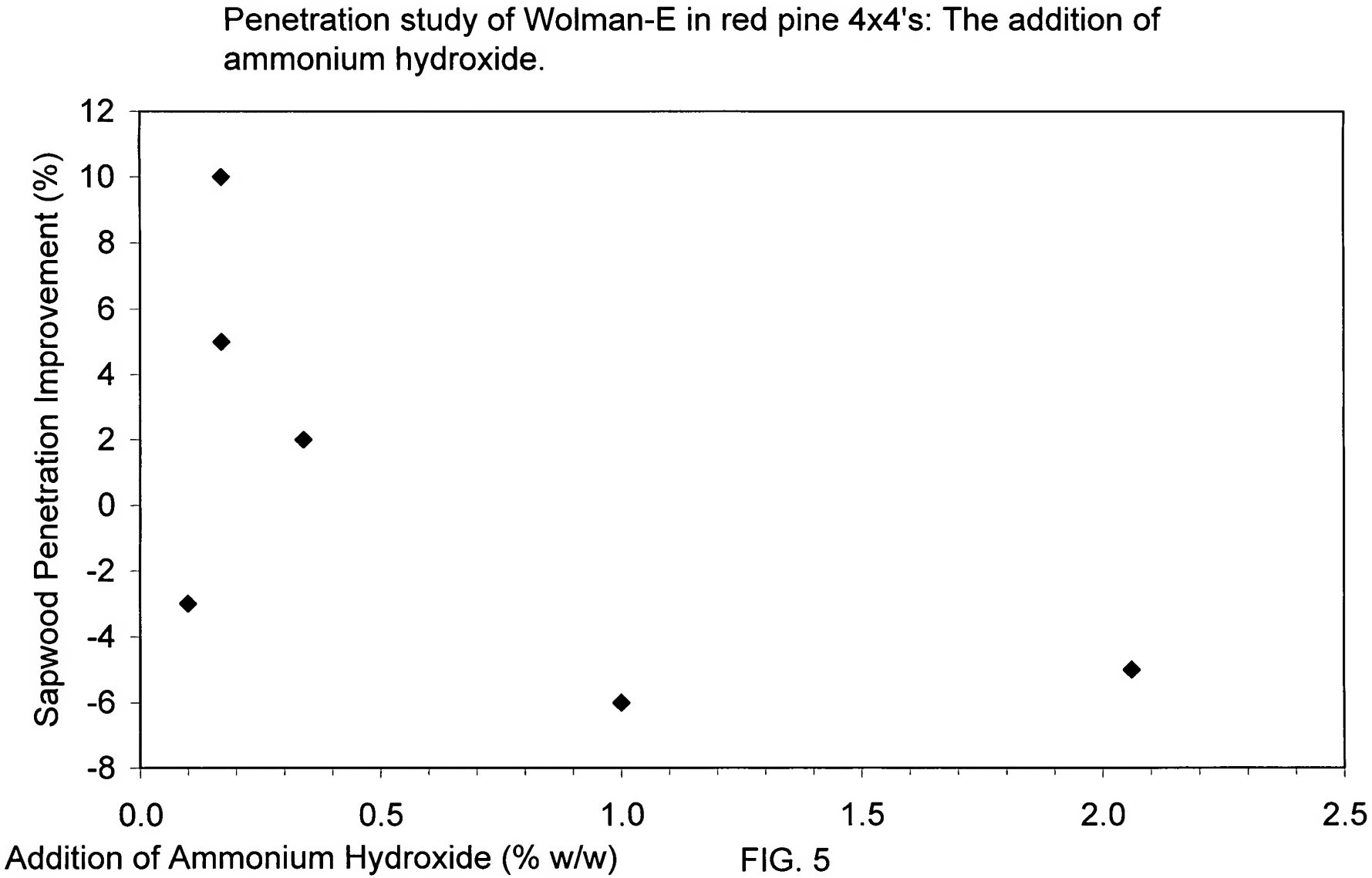
Penetration study of Wolman-E in red pine 4x4's: The addition of ammonium hydroxide.
Sapwood Penetration Improvement (%)
12
10
8
6
4
2
0
-2
-4
-6
-8
0.0
0.5
1.0
1.5
2.0
2.5
Addition of Ammonium Hydroxide (% w/w)

FIG. 5

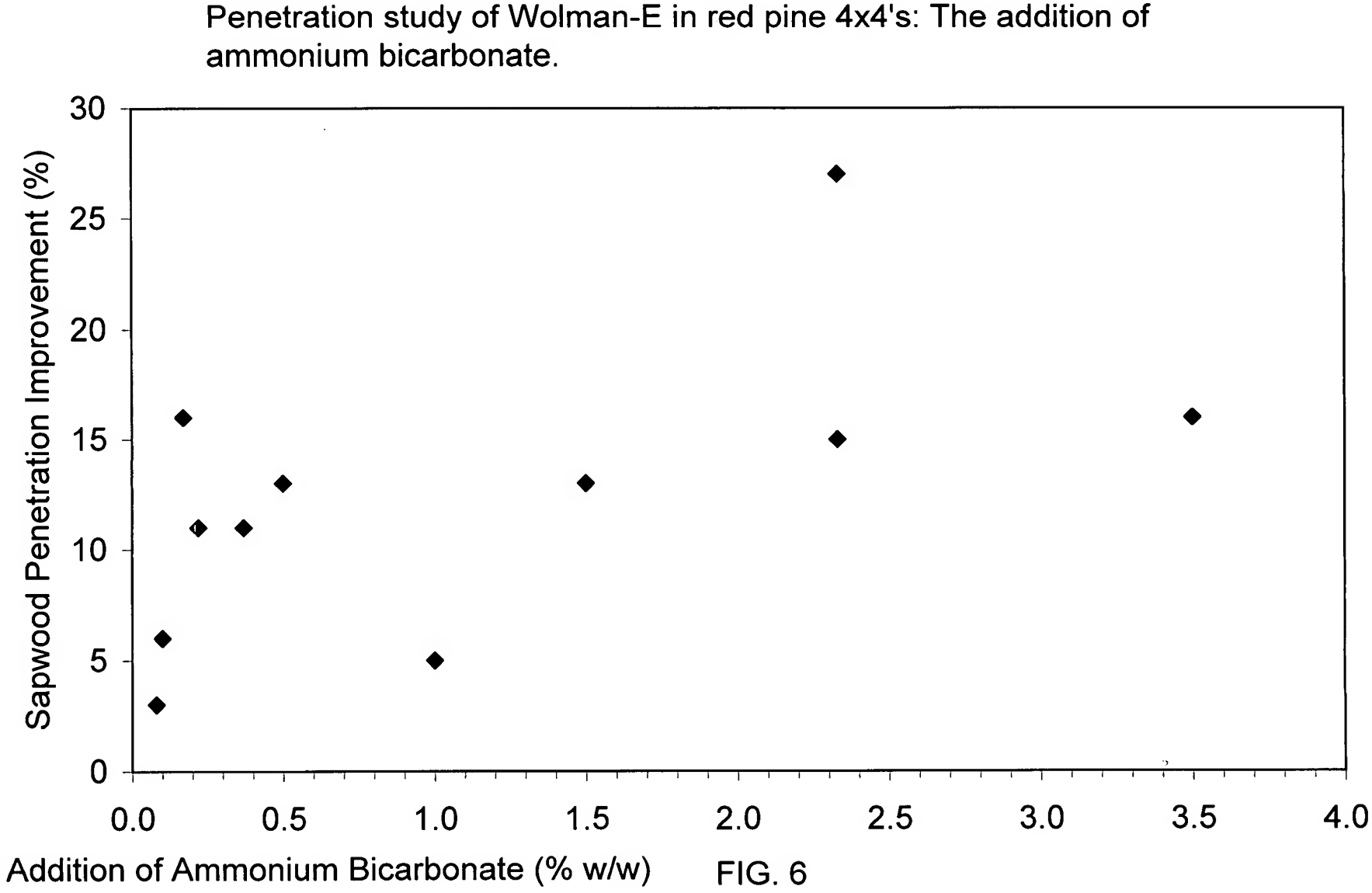
Penetration study of Wolman-E in red pine 4x4's: The addition of ammonium bicarbonate.
Sapwood Penetration Improvement (%)
30
25
20
15
10
5
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Addition of Ammonium Bicarbonate (% w/w)

FIG. 6

Penetration study of Wolman-E in red pine 4x4's: The addition of carbon dioxide.

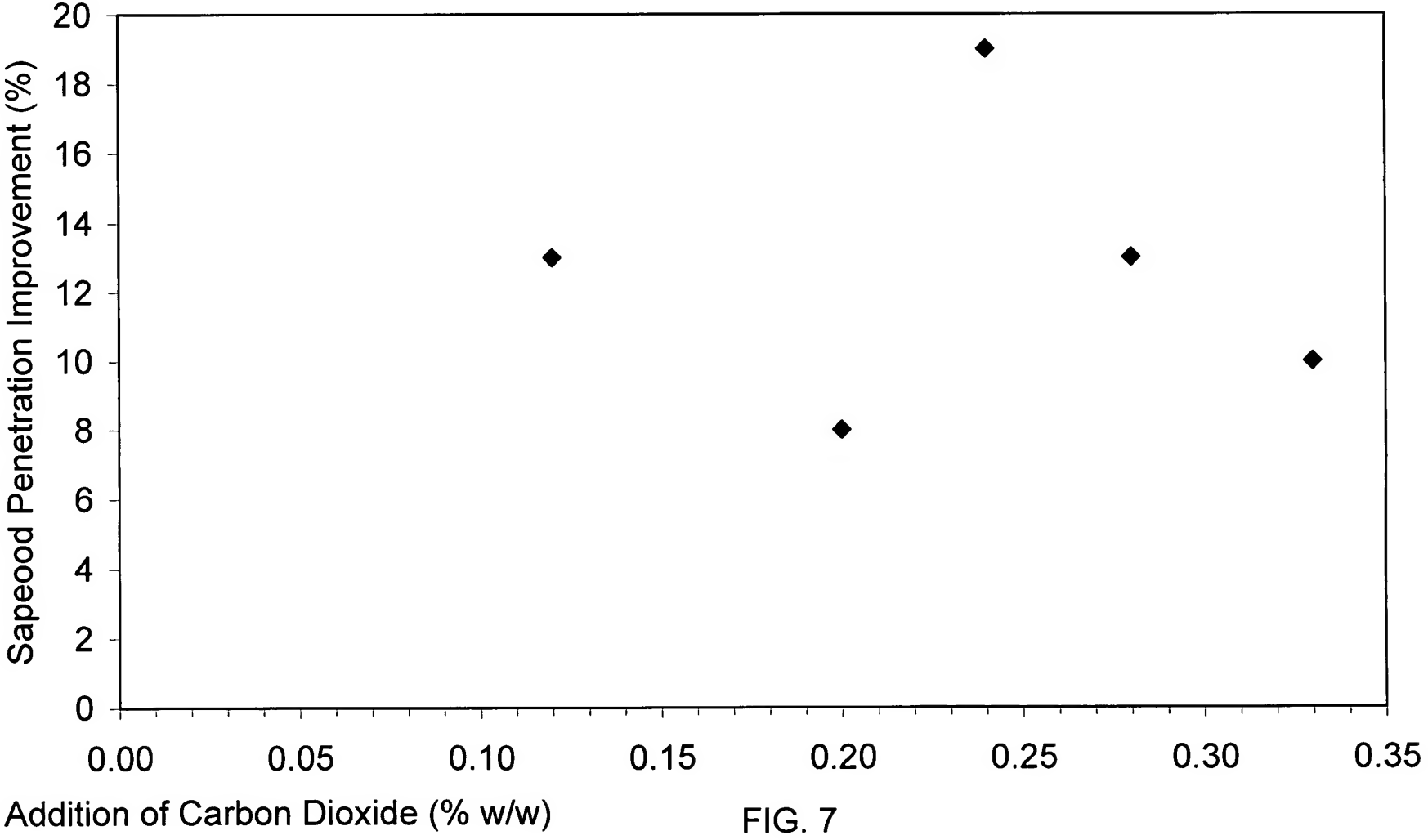

FIG. 7

Penetration study of Wolman-E in red pine 4x4's: A comparison of carbon dioxide alone and equivalence from ammonium bicarbonate.

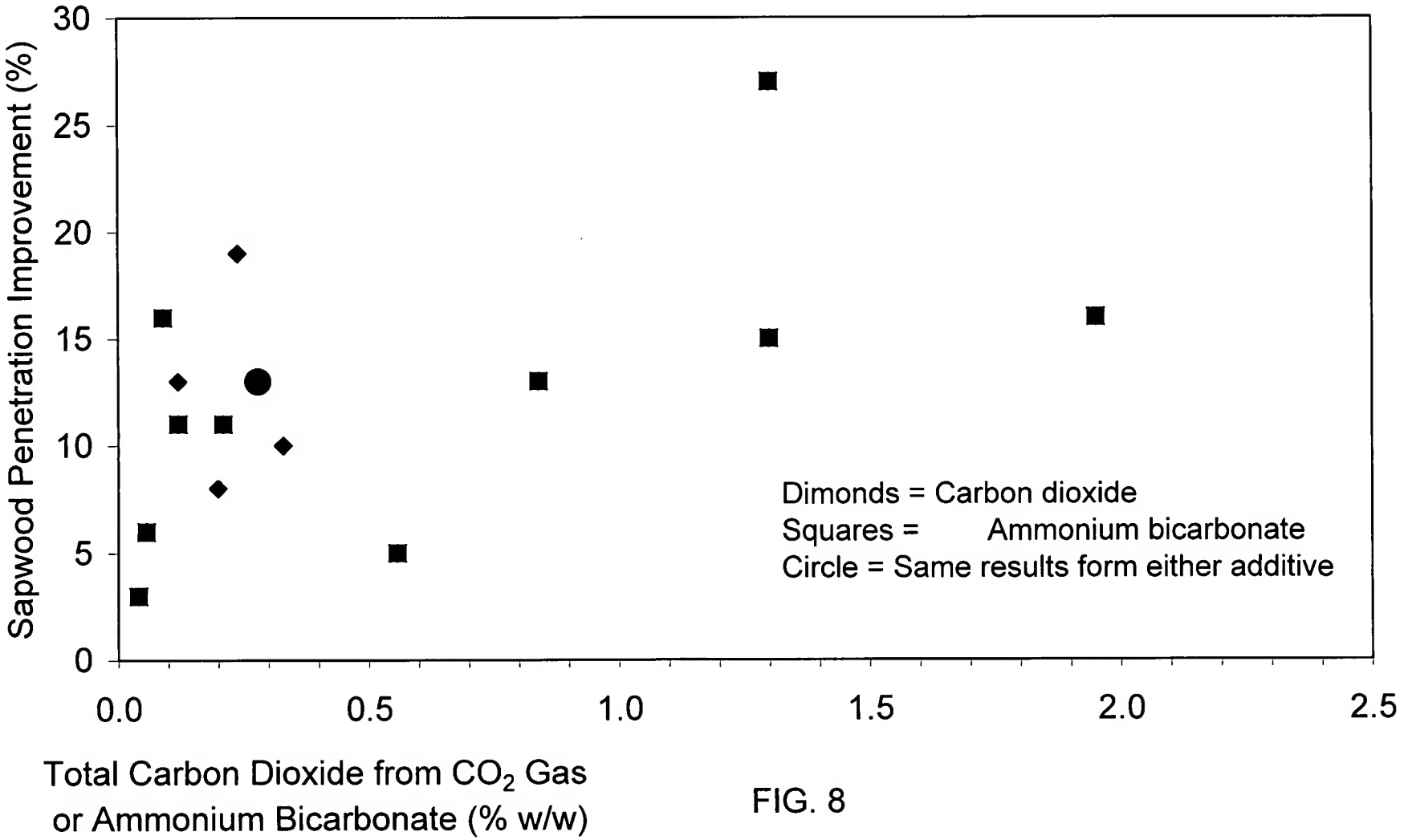

FIG. 8